Space Weather Forecast

Issued on Sunday, 02 January 2022 at 01:20 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance of G1/Minor storm on 02 January. Slight chance of moderate solar activity throughout.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been moderate, with one moderate class flare observed from the region close to the northwest limb. This region is barely discernible on true colour imagery, but has been responsible for much of the solar activity through the last 24 hours. The largest region in the southwest quadrant has been relatively inactive, but still poses a significant flare risk. Two other regions in the southern hemisphere are considered weak and do not present a heightened flare risk. No Earth-directed CMEs (coronal mass ejections) have been observed on available imagery.

Solar Wind / Geomagnetic Activity: Solar winds have gradually increased from slightly elevated to elevated levels through the last 24 hours, as the Earth connected with a fast solar wind. Total interplanetary field strength started moderate but weakened, with the north-south component also beginning the period with moderate fluctuations, before also weakening. Geomagnetic activity has been mainly Quiet to Unsettled (Kp 1-3) with an Active (Kp4) interval early in the period.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Mainly low solar activity is forecast, with a slight chance of moderate solar activity, due mainly to the two significant regions in the western hemisphere.

Solar Wind / Geomagnetic Activity: Solar wind speed are expected to remain elevated through 02 January, before declining to background levels during 03 and 04 January. Geomagnetic activity is expected to be mainly Unsettled through 02 and 03 January, with a chance of Active intervals and a slight chance of G1/Minor storms. Mainly Quiet to Unsettled conditions are then expected through 04 and 05 January.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	20	10	10	5
Very Active	R3 to R5 X	No	3	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	1
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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